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GPS

Mini Tracker

MINI

User Manual

V-A1.4

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1. Waterproof notices and disclaimers

Clamping firmly when assembling the tracker, tighten the screws, try to make the gap between the upper and lower shells small and uniform.

Do not let tracker stay in the water too long, taken out in time if it falls into the water, and then siphoning off the water with a towel or paper towel.

The structural design of the our products fully comply with the requirements of waterproof rating, in no event shall MEGASTECK be liable for direct, indirect, special, incidental, or consequential damages (including but not limited to economic loss, personal injury, and loss of asset and property) arising out of use or inability or illegality to use the product or documentation.

2. Products overview

Thanks for purchasing our product!

The tracker is a small, light tracker. It is easy to take and specially designed for children, old man, disabled people and pet.

Tracker supports SOS emergency calling, waterproof and auto turn on/off.

Build in U-blox GPS module, GSM module and low power arm processor.

Through GPS and GSM or GPRS communication, tracker can get its position and send the position data to your telephone via map (Google Earth or Google Map). At the same time, it will send the position data to the internet server by GPRS, so you can track the tracker's position.

Tracker has the following features and functions:

◆Waterproof (waterproofing grade: IP66)

◆AGPS position assisted

◆Pet mode (tracker will auto power on/off at preset interval)

◆Tracking via SMS/GPRS (TCP/UDP)

◆Support 5 authorized numbers

◆Real time position

◆Geo-fence alarm

◆Moving alarm

◆SOS emergency calling

◆Over speed alarm

◆Low battery alarm

◆Vibration alarm

◆Data Logger in no GSM signal area using Micro SD card (Max: 2GB)

3. Tracker's characteristics

Items	**Specification**
Charging Voltage	DC 4.8-5.5V/400mA (Mini USB port)
Battery	Rechargeable 750mAh battery (3.7V)
Dimension	50mm X 40mm X 20mm
Weight	50g (with battery)
Operating Temperature	-20°C to +60°C
GSM Module	Quad Band GSM 850/900/1800/1900MHz
GPS Module	U-blox module
Memory	Micro SD card (MAX: 2GB) （optional）
LED	1 LED lights to show GPS, GSM and other status.
Button	1 SOS button to send SMS for rescue

4. Getting started

This section will describe how to set up your tracker.

4.1. Hardware and accessories

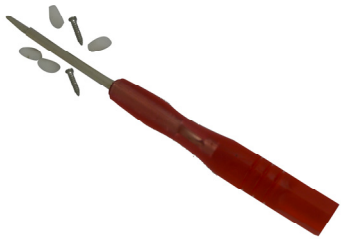
USB Cable

Charger Connector

Wall Charger

Vehicle Charger

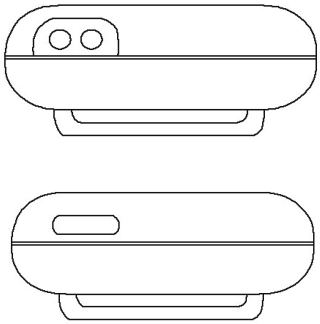
CD Rom



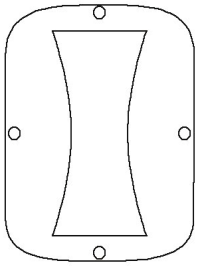
Spare Tools (Screwdriver, Rubber stopper, Screw)

4.2. View

Front View

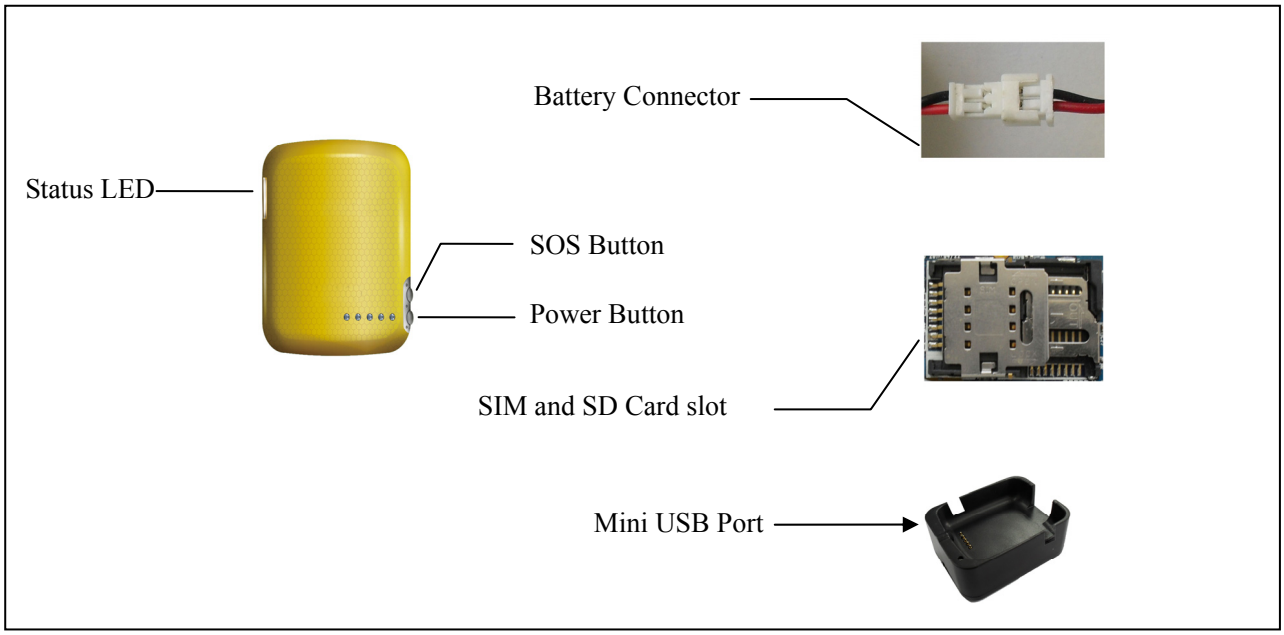


Side View



Back View

4.3. Functional key and port



LED	
0.5s on and 0.5s off	Initializing
1s on and 1s off	Registered to the GSM network and searching satellite
1s on and 3s off	Positioning success
Buttons	
Power Button	Press it for 3 seconds to turn on or turn off tracker
SOS Button	Press it for 3 seconds to send a SMS to authorized numbers.
Other connectors	
Battery Connector (Inside)	Connect the Backup-Battery-Connector when first use the tracker.
SIM and SD Card slot (Inside)	Insert SIM and SD card here
Five point of contacts	Used for charging, firmware update, configuration on PC

4.4. First start

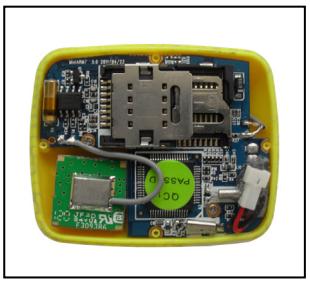
Please read this manual before using tracker and check if all parts are included in the packaging box.

4.4.1 Ensure that your tracker has a working SIM card.

- Check that the SIM card has not run out of credit (Test the SIM card in a phone to make sure it can send and receive SMS)
- Check that lock code of the SIM card is turned off.
- If you require the function of sending an SMS location report to the authorized phone number when it makes a call to tracker, please make sure the SIM card installed supports displaying caller ID.

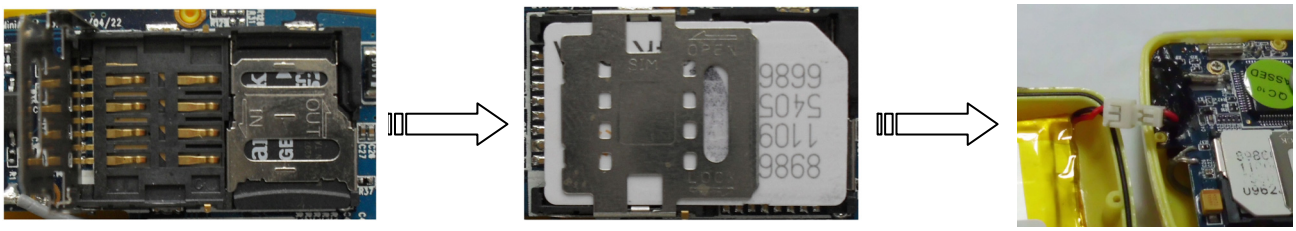
4.4.2 Insert SIM/SD card and install backup battery.

- Unscrew the back cover of tracker as below picture shows:



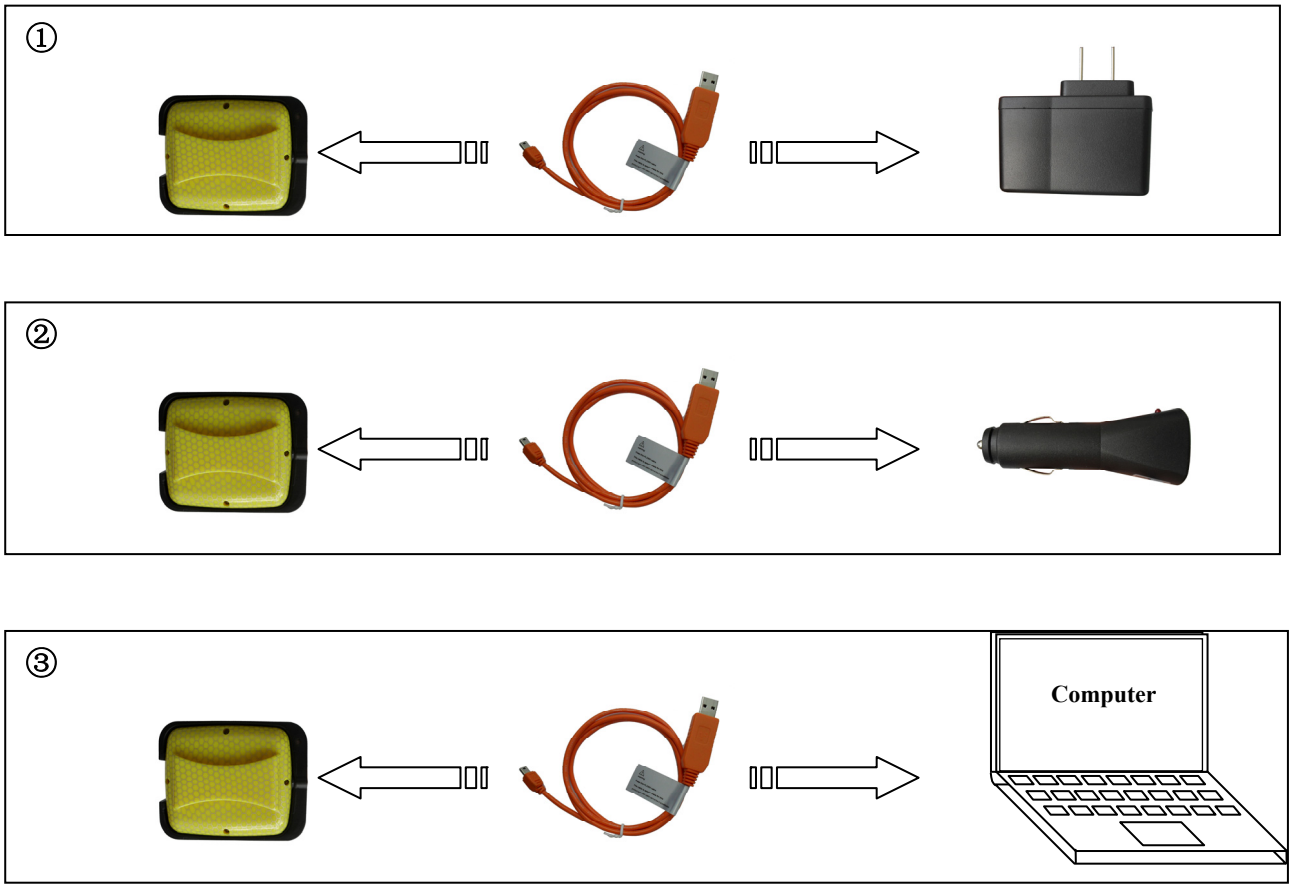
- Firstly insert the SD card, secondly insert the SIM card, and lastly connect the Backup

Battery Connector.



- Put back the back cover and screw it up (put on the rubber stopper).

4.4.3 First use of tracker, please charge the battery for at least 3 hours in power-off status using the wall charger or vehicle charger. Or you can connect the tracker directly to computer by USB for charging.
(Note: Please turn off tracker when charging!)



4.4.4 Find a suitable place for installing tracker; make sure the front cover face sky.
- Check that the LED is flash fast. The tracker is initializing.
- Check that the LED is 1s on and 1s off (it means that its status is: registered to the GSM

network and searching satellite).
- Check that the LED is 1s on and 3s off (it means that its status is: work normal and positioning success).

5. Basic function

The tracker will not send SMS alarm and call the emergency phone without set the authorized number (at most for 5 authorized numbers).

Advice: set the authorized number first when you first use!

For example:
FACID,123456,AUTHORIZE,1=13145826121,2=13145826122,3=13145826123,4=13145826124,5=13145826125
Reply: FACID authorize ok!
It means that set tracker success.
This command also can set 1 or 2 authorized number only, just don't fill in behind.
Cancel this function' command:
FACID,123456,AUTHORIZE
Reply: FACID authorize ok!

5.1. Tracking by calling

This function is only effective in tracking mode.

Note: it must be set the authorized number first!

Operation:

Tracker will hand up the phone when authorized number call and it will send a SMS with real time GPS location data. "CUR" means that GPS data by the real time.

1. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
2. It will send a new effective GPS data or the last effective location data after search the satellite.

The last effective location data SMS:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:LAST,,GNS:0GPS:04,92.9,460,00,262C,1073

Real time GPS location data SMS:

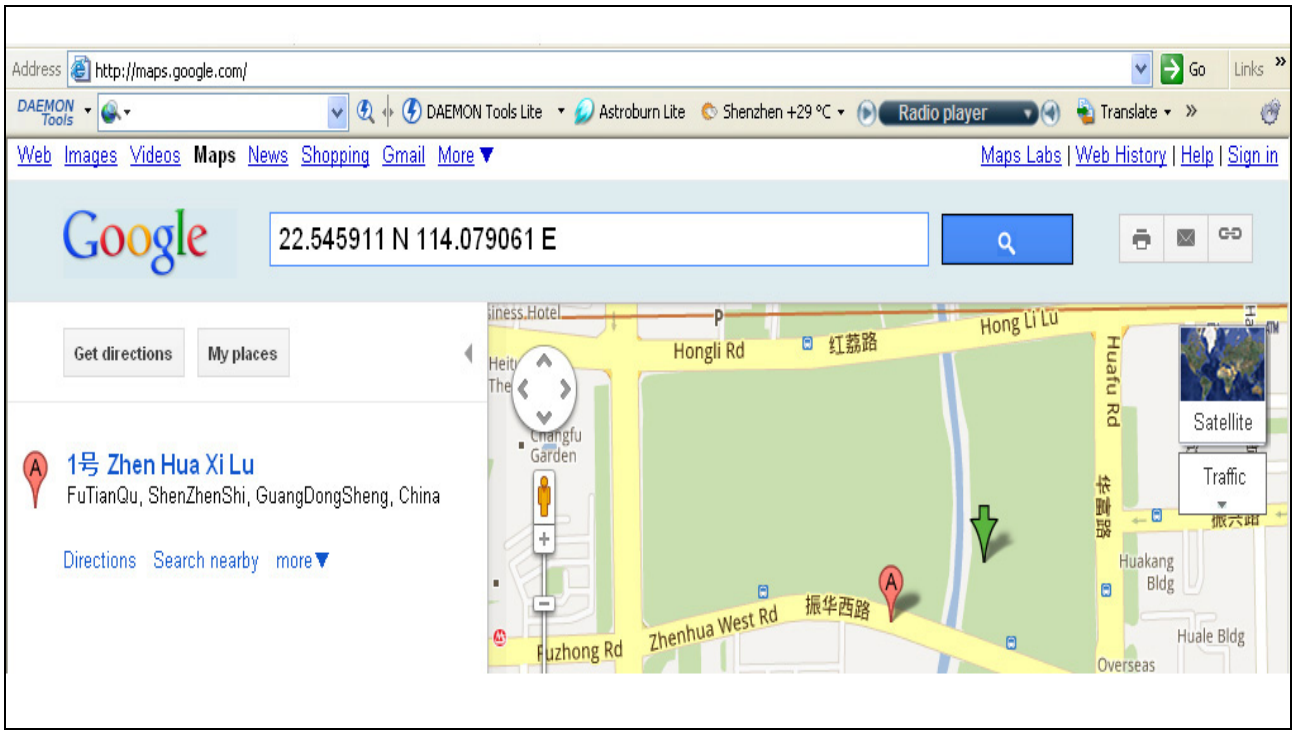
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:CUR,,GNS:0GPS:04,92.9,460,00,262C,1073

5.2. Real time tracking

Function: send the command: FACID,123456,SMS,FAST and get the location by real time. You can get the location immediately when you send this command.

5.3. Check the position on Google map via longitude and latitude

For example: 22.545911N 114.079061E



5.4. Uploaded regularly via GPRS

Function: Set an interval for the tracker to continuously send its location to server.

The first step: set GPRS parameter

Send command to tracker (for example):

FACID,123456,GPRS,ADDR=219.133.34.184,PORT=8000,NAME=,PASS=,APN=CMNET,ID=,MODE=0,HBE=0,HBN=HI,HBI=50,HBT=100,HBR=1;

Reply: FACID gprs ok!

1. ADDR: it is your server's IP.
2. PORT: your server's port.

3. NAME: access Point's user name.
4. PASS: access point's password.
5. APN: network service access point.
6. ID: device number.
7. MODE: communication mode, 0 means that TCP, 1 means that UDP.
8. HBE: 1 or 0 enable/disable heartbeat function.
9. HBN: text message of heartbeat.
10. HBI: heartbeat transmission time interval.
11. HBT: The number of heartbeat packets sent (when server receives the number of times is full, and it didn't feedback, device will restart.)
12. HBR: When the tracker can't get the server response, whether to restart (reset switch)

ADDR,PORT,NAME,PASS,APN,ID,MODE,HBE,HBN,HBI,HBT,HBR (those are according to fill in yourself).

Cancel this command:

FACID,123456,GPRS

Reply: FACID gprs ok!

The second step: set the upload time interval.

Send the command via SMS to tracker: FACID,123456,LOC,I=60,T=998,L=45;

Reply: FACID loc ok!

LOC means that command's name.

I=60 means that the upload time interval is 60s, range of: 10-65535.

T=998 means that the upload times is only 998 times, if T=999 means that unlimited upload times.

L=45 means that the distance is less than 45 meters compared to the last position (max: 65535), the tracker will not send the GPS location data to server or authorized number, L=0 means that unlimited.

Cancel this command:

Reply: FACID loc ok!

6. Special function

6.1. Pet mode

This function is according to set the tracker's working time.

For example:

FACID,123456,config,poweron1=10:30,poweroff1=11:00,poweron2=18:30,poweroff2=19:00,powerenn=1

Reply: FACID config ok!

poweron1=10:30 turn on time

poweroff1=11:00 turn off time

poweron2=18:30 turn on time

poweroff2=19:00 turn off time

poweren=1 Start the timing switch machine function poweren=0 Close the timing switch

machine function

7. Other function

7.1. Change the password

Sends the following command can make the tracker to change the password through mobile phone or the server.
For example:
Send the command:
FACID,123456,PASSWORD,V=888888
Reply: FACID password ok!
123456 is the default password, 888888 is the new password.
（Note: Password must be 6 digits)

7.2. Reset remote

For example:
FACID,123456,restart
This command can make the tracker to restart but not reply SMS.

7.3. Restore default

For example:
FACID,123456, default
Reply: FACID default ok!

7.4. Tracking regularly via SMS

Function: tracker will send the SMS to authorized number by timing.
Set the upload regularly and the upload number of times.
FACID,123456,LOC,I=60,T=20,L=45
Reply: FACID loc ok!
LOC: means that the command name with positioning regularly.
I=60: means that the location regularly is 60s, range of: 10-65535.
1. T=20: means that the upload number of times is 20, if T=999 means that unlimited times to upload.

L=45: means compared to latest position, the distance is closer than 45m and the tracker will not send the GPS position to authorized number via SMS; L=0 means that unlimited distance to upload data.
Cancel this command:
FACID,123456,LOC
Replay: FACID loc ok!

When you use this function, the server's parameter configuration must be cancel; otherwise it will not send the upload data to authorized number!

7.5. SMS format

The tracker has two kinds of SMS formats to reply:
1.Including longitude and latitude, location state, battery level and satellites act.
Command: FACID,123456,SMS,text
Reply: FACID sms ok!
For example:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:CUR,,GNS:0GPS:04,92.9,460,00,262C,1073
2.Google Link SMS, a data format with can link to Google map,
Command: FACID,123456,SMS,link
Reply: FACID sms ok!
For example:
http://maps.google.com/maps?f=q&hl=en&q=loc:22.637118,114.032055&SP:1.55 21/03/14 17:35 BAT=100% SGL:LAST GNS:0GPS:5

7.6. Over speed alarm

Function: both of that will send an alarm when the moving speed is bigger or less than preset value if you set this function.
For example:
FACID,123456,OV,L=50
Reply: FACID ov ok!
L=50，L max of 65535, unit is: KM/H
Cancel this function:
FACID,123456,OV
Replay: FACID ov ok!

Advice: it is suggested to set it higher than 50 KM/H in order to improve the tracker's accuracy.

7.7. Geo-fence

Function: if already set a Geo-fence, when the tracker is get into or out of the Geo-fence area, it will send an alarm message.
For example:
FACID,123456,GEOFENCE,A1=113.000000e/22.400000n,A2=114.800000e/22.600000n,B1=113.000000e/22.400000n,B2=114.800000e/22.600000n,C1=113.000000e/22.400000n,C2=114.800000e/22.600000n,D1=113.000000e/22.400000n,D2=114.800000e/22.600000n,E1=113.000000e/22.400000n,E2=114.800000e/22.600000n
Reply: FACID geofence ok!

Note: A1, B1, C1, D1, E1 for the preset range of the longitude and latitude in the upper left corner, and A2, B2, C2, D2, E2 is preset in the low right corner of the latitude and longitude
Cancel this command:
FACID,123456,GEOFENCE
Reply: FACID geofence ok!

7.8. Remove alarm

Function: if already set this function, when the tracker gets into or out of the Geo-fence area, it will send an alarm message.
FACID,123456,MOVE,L=200
Reply: FACID move ok!
L=200(max: 65535), unit: meters，L: radius.
Send this command and the tracer will search for the first time location of the GPS signals as the center, the tracker will report alarm when it is move in or out of the radius is 200 meters circle.
Cancel this function’s command:
FACID,123456,MOVE
Reply: FACID move ok!

7.9. Vibration alarm

Function: Set the vibration alarm. When the tracker detects enough strength of vibration, it will send an alarm message.
For example:
FACID,123456,VIB,L=5
Reply: FACID vib ok!
Sensitivity level: 1-10 (max: 10)
Cancel this function:
FACID,123456,VIB
Reply: FACID vib ok!

Also can set 3G sensor with this function:
FACID,123456,GSensor,L=40
Reply: FACID gsensor ok!
3G sensor's sensitivity level: 0~50 (max: 50).
Cancel this command:
FACID,123456,GSensor
Replay: FACID gsensor ok!

7.10. Low power alarm

Function: **When the battery level is lower than 30%,** the tracker will send a low power alarm message to remind users to charge in time.

7.11. SOS alarm

Function: in an emergency, press the SOS button for 3 seconds ***(keep pressed and the LED will extinguish)***, tracker will send an alarm SMS

1. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
2. It will send a new effective GPS data or the last effective location data after search the satellite.

The last effective location data SMS:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:LAST,SOS,GNS:0GPS:04,92.9,460,00,262C,1073

Real time GPS location data SMS:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:CUR,SOS,GNS:0GPS:04,92.9,460,00,262C,1073

7.12. Set the time zone

Function: default is ***GMT+8,*** set the time zone of your place so SMS time consistent with local time.
For example:
FACID,123456,TIME ZONE,V=+9
Reply: FACID time zone ok!

（-12,-11,-10,-9,-8,-7,-6,-5,-4.5,-4,-3.5,-3,-2,-1,0,+1,+2,+3,+3.5,+4,+4.5,+5,+5.5,+6.5,+6,+7,+8,+9,+9.5,+10,+11,+12,+13）

7.13. Set the SD card

If the tracker insert SD card and it can not receive the GSM signal, the GPRS location data will be save to the SD card. After receive the GSM signal, the data will be packaged to upload!

Send the command:

FACID,123456,SDCARD,TEST

Insert SD card, and use this command to test whether the SD card is work or not

Reply: FACID sdcard ok! or FACID sdcard fail!

If receive FACID sdcard fail!, please to check the SD card is work or not again.

8. Problems & solutions

Problem: Tracker will not turn on	
Possible cause	**Resolution**
The power button is not pressed long enough	Press and hold the ON/OFF button for 3 second or more
Battery needs charging	Recharge battery for 3 hours
Problem: Tracker will not reply with SMS	
Possible cause	**Resolution**
Can not registered to the GSM network (LED flash 0.5 second on and 0.5 second off)	Make sure the GSM signal is good. Check the SIM card, Inspect SIM card again. If re-inserting does not help, try another one.
GSM network is slow	Some GSM networks slow down during peak time or when they have equipment problems.
Wrong password in your SMS or wrong SMS format	Write correct password or SMS format
The SIM card has run out of credit	Replace or top up the SIM card
The SIM damaged or warped	Please check the SIM card, sweep metal of card to get in touch with a point, If still invalid then replace SIM card.
Problem: LED flash 1 second on and 1 second off	

Possible cause	Resolution
Tracker does not have clear view of the sky	Move the tracker to a location where the sky is visible. Tall buildings, trees, heavy rain, can cause problems with the GPS reception.
Bad GPS reception	Place the front side of tracker towards sky
Battery power is low	Recharge it.
Problem: Fails to Connect to Server via GPRS	
Possible cause	**Resolution**
SIM card does not support GPRS function	Enable SIM card GPRS function
GPRS function of tracker is turned off	Turn on GPRS function
Incorrect IP address or port	Set the right IP address and port, then reset
GSM signal is weak	Move the tracker to a location with good GSM reception

9. Attachment 1：SMS data format

The cell phone (authorized number) will get the position information via tracker SMS.

There are two kinds of SMS data formats: Latitude and longitude format and Google link format.

Latitude and longitude format:

lat:22.636975N long:114.032996E, SP:0.47, 18/04/14 10:19, BAT=100%, SGL:CUR, LowBattery, GNS:0GPS:04, 92.9, 460, 00, 262C, 1073

Data analysis:

For example	Explain

<table>
<tr><td>lat:22.636975N</td><td colspan="2">Latitude</td></tr>
<tr><td>long:114.032996E</td><td colspan="2">Longitude</td></tr>
<tr><td>SP: 0.47</td><td colspan="2">Real time speed is 0.47 Km/h</td></tr>
<tr><td>18/04/14 10:19</td><td colspan="2">Date/time</td></tr>
<tr><td>BAT=100%</td><td colspan="2">State Of Charge</td></tr>
<tr><td rowspan="2">SGL:CUR</td><td>SGL:CUR</td><td>Real time positioning success</td></tr>
<tr><td>SGL:LAST</td><td>Last valid data</td></tr>
<tr><td>LowBattery</td><td colspan="2">Alarm information, as follow:
<table>
<tr><td>Alarm type</td><td>Explain</td></tr>
<tr><td>Move in</td><td>Tracker gets into preset warning area.</td></tr>
<tr><td>Move out</td><td>Tracker out of the preset warning area.</td></tr>
<tr><td>Geo in(A,B,C,D,E)</td><td>Tracker gets into the preset Geo-fence area.</td></tr>
<tr><td>Geo out(A,B,C,D,E)</td><td>Tracker out of the preset Geo-fence area</td></tr>
<tr><td>OverSpeed</td><td>The moving speed is higher than preset value.</td></tr>
<tr><td>LowSpeed</td><td>The moving speed is lower than preset value.</td></tr>
<tr><td>Help</td><td>The SOS button is pressed for 3 seconds or more than 3 seconds.</td></tr>
<tr><td>VIB</td><td>Tracker detects enough strength of vibration.</td></tr>
<tr><td>LowBattery</td><td>Battery level is lower than 30%.</td></tr>
</table></td></tr>
<tr><td>GNS:0</td><td colspan="2">The number of available GLONASS satellites</td></tr>
<tr><td>GPS:8</td><td colspan="2">The number of available GPS satellites</td></tr>
<tr><td>92.9</td><td colspan="2">Altitude (unit：meter)</td></tr>
<tr><td>460</td><td colspan="2">MCC (mobile country code)</td></tr>
<tr><td>00</td><td colspan="2">MNC (mobile network code)</td></tr>
<tr><td>262C</td><td colspan="2">LAC (location area code)</td></tr>
<tr><td>1073</td><td colspan="2">Cell identification code</td></tr>
</table>

Google link format:

For example:

http://maps.google.com/maps?f=q&hl=en&q=loc:22.637118,114.032055&SP:1.55 21/03/14 17:35 BAT=100% SGL:LAST LowBattery GNS:0GPS:5

Data analysis:

<table>
<tr><th>For example</th><th colspan="2">Explain</th></tr>
<tr><td>http://maps.google.com/maps?f=q&hl=en&q=loc:22.637118,114.032055&SP:1.55</td><td colspan="2">Google link</td></tr>
<tr><td>21/03/14 17:35</td><td colspan="2">Date</td></tr>
<tr><td>BAT=100%</td><td colspan="2">State Of Charge</td></tr>
<tr><td rowspan="2">SGL:LAST</td><td>SGL:CUR</td><td>Real time positioning success</td></tr>
<tr><td>SGL:LAST</td><td>Last valid data</td></tr>
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<tr><td>Move out</td><td>Tracker out of the preset warning area</td></tr>
<tr><td>Geo in（A,B,C,D,E）</td><td>Tracker gets into the preset Geo-fence area</td></tr>
<tr><td>Geo out(A,B,C,D,E)</td><td>Tracker out of the preset Geo-fence area</td></tr>
<tr><td>OverSpeed</td><td>The moving speed is higher than preset value</td></tr>
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<tr><td>LowBattery</td><td>Battery level is lower than 30%</td></tr>
</table></td></tr>
<tr><td>GNS:0</td><td colspan="2">The number of available GLONASS satellites</td></tr>
<tr><td>GPS:5</td><td colspan="2">The number of available GPS satellites</td></tr>
</table>